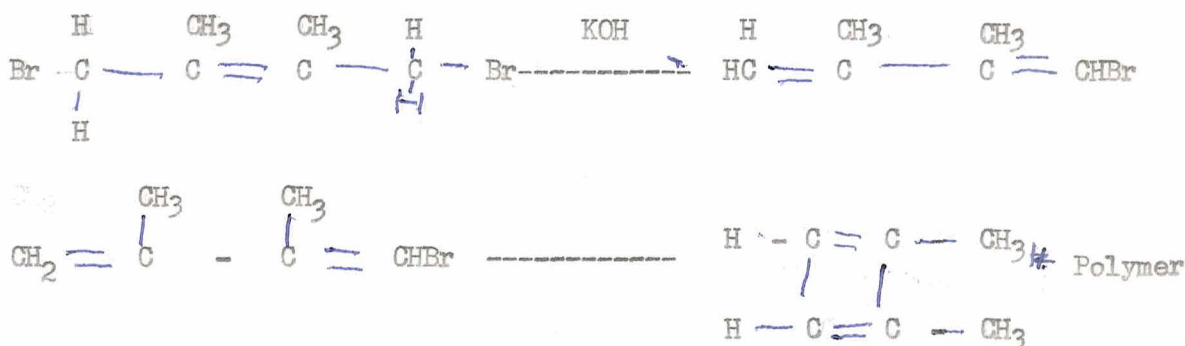


1, 2-Dimethylcyclobutadiene
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This is a brief abstract of work we have accomplished since September toward the synthesis of 1,2-dimethylcyclobutadiene by heating 1, 4-dibromo-2, 3-dimethylbutene-3 with a large excess of powdered potassium hydroxide. From the reaction mixture 1-bromo-2,3-dimethylbutadiene-1,3, 2,3-dimethylbutadiene, a large amount of polymer, and a small amount of a fragrant smelling hydrocarbon of boiling point 82 were obtained. A considerable amount of water was also isolated. Usually the mixture gave a Beilstein test for halogen. Repeated distillation from KOH did not remove the last traces halogen. A molecular weight determination and chemical analysis indicate a molecular formula C_6H_8 .



Chemical analysis and molecular weight determination were that which would be required for 1,2-dimethylcyclobutadiene. It reacted with 1 molecule of bromine to yield a dibromide and with excess bromine to give an oily bromo compound possibly a tetrabromide. As stated in our previous report 1-bromo-2,3-dimethylbutadiene-1, 3 has been identified. It reacts with maleic anhydride to yield a bromine free crystalline hydrocarbon. Moreover it reacts with one molecule of bromine to yield a dibromo compound and with two molecules of bromine to give a solid pentabromide.

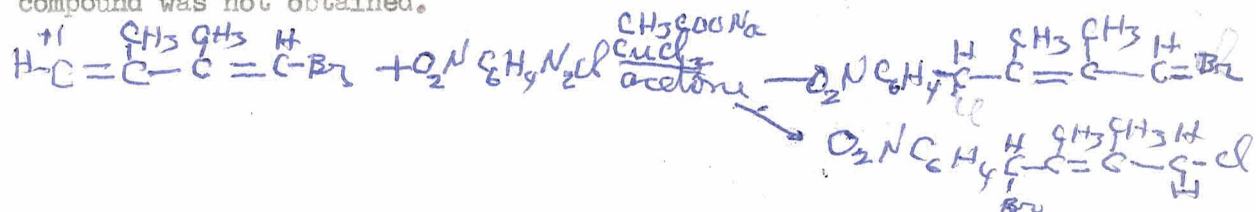
When this substance was carefully distilled and subjected to ozonolysis diacetyl as its

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phenyl osazone was isolated. Formaldehyde was also isolated in the form of its dimethyldihydroresorcinol derivative.

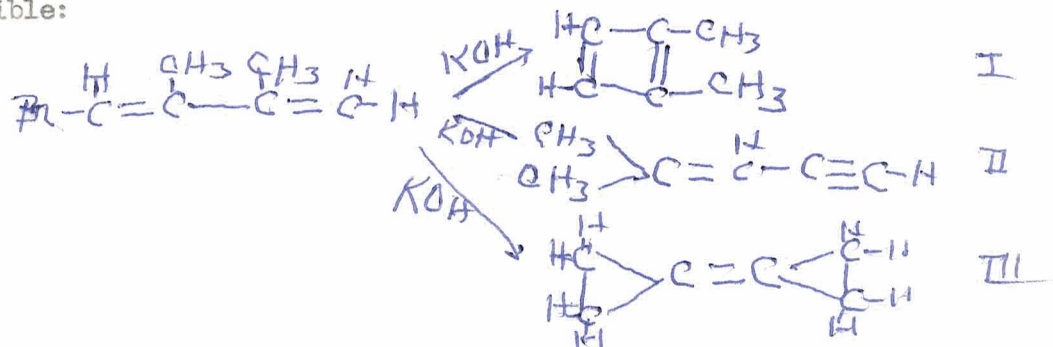
We attempted to react this diene with diazotized p-nitroaniline in acetone solution in the presence of copper (II) chloride and sodium acetate. The expected compound was not obtained.



We shall repeat this experiment using a slightly larger concentration of HCL. If this compound is isolated it will be treated with Zn dust in a suitable solvent.



When 1-bromo 2,3-dimethylbutene is heated with KOH three different compounds are possible:



The following are some of the reasons why it is so difficult to isolate

even a small sample of the pure fragrant hydrocarbon:

1. The yield is extremely low.
2. The hydrocarbon is easily polymerized.
3. The halogen atom is difficult to remove from the double bond carbon atom to which it is attached (vinyl).
4. 2,3-Dimethylbutadiene-1,3 boiling point 69° is one of the products in the reaction mixture.